STUDENTS’ MATHEMATICAL INTERACTIONS IN WHOLE GROUP WORK

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Whole group discussion has become a common practice with a modest amount of research compared to pair and small group work. In our study, we examine the emergence of relationships between the students’ learning of mathematics and their interaction in pair (Chico & Planas, 2011) and whole group. The motivation for the study is the increasing use of collaborative classroom settings, along with the need to refine scientific arguments around them. We aim to examine the potential of groups from the perspective of creating learning opportunities. We interpret the notions of learning and learning opportunities as conceptually and empirically similar. Both refer to the favorable negotiation of circumstances toward the construction of knowledge. Cobb, Yackel and Wood (1991) already suggested the value of thinking of learning at an operational level in terms of identifiable learning opportunity environments.

We designed and analyzed six lessons based on problem solving in a secondary classroom with a group of students aged 15 to 16, and the teacher. Our expertise in and the curricular relevance of the transition from arithmetic to algebraic thinking made us choose this topic for the sequence of problems. We identified pair and whole group moments in which mathematical practices were at the core of the discussion due to the existence of diverse meanings. Diversity of meanings was thought of as a learning opportunity. Qualitative comparative methods were applied to develop narrative themes that are central to what takes place in the interaction, marking in particular the positive effect of collaboration on the students’ mathematical activity. Our results show progress in algebraic thinking related to generalization processes that were fostered at different points of the interaction. However, we have found a few moments that become exceptions in that they represent a non-positive influence on learning.

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References
